

COVINGTON & BURLING

1201 PENNSYLVANIA AVENUE, N.W.

P.O. BOX 7566

WASHINGTON, D.C. 20044-7566

(202) 662-6000

TELEFAX: (202) 662-6291

TELEX: 89-593 (COVLING WSH)

CABLE: COVLING

JONATHAN D. BLAKE

DIRECT DIAL NUMBER

(202) 662-5506

ORIGINAL

LECONFIELD HOUSE

CURZON STREET

LONDON W1Y 8AS

ENGLAND

TELEPHONE: 071-495-5655

TELEFAX: 071-495-3101

RECEIVED

BRUSSELS CORRESPONDENT OFFICE

44 AVENUE DES ARTS

BRUSSELS 1040 BELGIUM

TELEPHONE: 32-2-512-9890

TELEFAX: 32-2-502-1598

March 20, 1996

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**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY**

VIA HAND DELIVERY

The Honorable William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Dear Mr. Caton:

Sky Station International, Inc., ("SSI") seeks to create a new global stratospheric telecommunications service ("GSTS") in the 47.2-47.5 and 47.9-48.2 GHz bands using a revolutionary technology that will bring unprecedented benefits to the citizens of the United States and the world. As first steps in that process, SSI hereby submits an original and nine copies of:

(1) Request to Establish New GSTS Service, Additional Comments and Petition for Rulemaking (the "*Request and Petition*"); and

(2) Application of Sky Station International, Inc. (the "*Application*").

We urge that the Commission promptly act on the *Request and Petition* by carving out spectrum for GSTS in the pending Millimeter Wave Proceeding and taking the necessary regulatory steps to establish service rules for the this advanced international service. This will facilitate and expedite the process of developing the GSTS service to the point where SSI and other qualified applicants can offer its many benefits to the mass world public.

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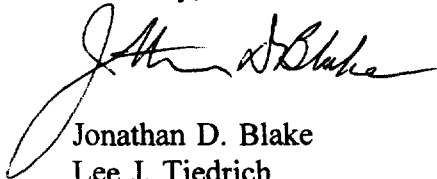
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The Honorable William F. Caton
March 20, 1996
Page 2

Moreover, because of the continuing development of the U.S position for WRC '97, we urge that our proposal be noted in that process and that modest changes be proposed to the international table of allocations to minimize the potential for harmful interference. We realize that in the normal course the *Application* would not be granted by the Commission until the rule making has been completed. But we are submitting it now to provide additional specificity to our proposal, to elicit any need for additional information, and to position our service for the earliest possible grant. SSI will amend the *Application* to comply with the GSTS rules, and the application and filing fee requirements once they are established.

Any questions with respect to either the *Request and Petition* or the *Application* should be directed to Paul Mahon or Christopher Patusky of Mahon & Patusky, attorneys for Sky Station International, Inc., or the undersigned.

Sincerely,



Jonathan D. Blake
Lee J. Tiedrich
Attorneys for Sky Station
International, Inc.

LJT/djw
Enclosure
ET Docket No. 94-124

cc: Chairman Reed E. Hundt
Commissioner James H. Quello
Commissioner Andrew C. Barrett
Commissioner Rachelle B. Chong
Commissioner Susan Ness

ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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MAR 20 1996

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of Amendment of Parts 2
and 15 of the Commission's Rules to
Permit Use of Radio Frequencies Above
40 GHz for New Radio Applications

ET Docket No. 94-124

Petition of Sky Station International,
Inc. for Amendment of the Commission's
Rules to Establish Requirements for a
Global Stratospheric Telecommunications
Service in the 47.2-47.5 GHz and
47.9-48.2 GHz Frequency Bands

RM- _____

**REQUEST TO ESTABLISH NEW GSTS SERVICE, ADDITIONAL
COMMENTS AND PETITION FOR RULEMAKING**

SKY STATION INTERNATIONAL, INC.

Alexander P. Haig

President and Chief Operating Officer

3810 Concorde Parkway, Suite 1600

Chantilly, Virginia 22021

Martine Rothblatt
Paul A. Mahon
Christopher Patusky
Mahon & Patusky, Chartered
1735 Connecticut Avenue, N.W.
Washington, D.C. 20009
(202) 483-4000
Its Attorneys

Jonathan D. Blake
Paul J. Berman
Lee J. Tiedrich
Covington & Burling
1201 Pennsylvania Avenue, N.W.
P.O. Box 7566
Washington, D.C. 20044-7566
(202) 662-6000
Its Attorneys

Date: March 20, 1996

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SUMMARY

Sky Station International, Inc. ("SSI") hereby urges the Commission to allocate certain frequencies in the 47 GHz band for the Global Stratospheric Telecommunications Service ("GSTS"), a revolutionary new fixed, mobile and portable wireless telecommunications service, and adopt appropriate rules for the implementation of this service. Unlike any other existing or proposed telecommunications service, GSTS operates using a global network of geostationary stratospheric platforms. GSTS will provide inexpensive worldwide broadband wireless telecommunications services such as access to the Internet's World Wide Web and picturephone service to more than 80% of the world's population. This unprecedented virtual universal coverage will expand educational opportunities, enhance competition, preserve life and property, stimulate the economy, and perpetuate U.S. technological leadership. All of this can be done using SSI's breakthrough technology which holds the GSTS platforms in geostationary position in the stratosphere without harming the ozone layer and environment.

The regulatory framework for GSTS would build on the Commission's ongoing efforts to authorize commercial service in the underutilized "millimeter wave" band. Specifically, GSTS would operate in the 47 GHz band which has been proposed for licensed commercial use in the Millimeter Wave Proceeding. This spectrum designation generally would comply with domestic and international frequency allocations, although it would require some minor changes to be addressed at WRC-97.

Since the 47 GHz band is virtually free of incumbents, it should be able to accommodate all qualified GSTS applicants. To achieve this goal, the Commission should adopt four regulatory principles. First, the Commission should adopt liberal

technical rules, but impose an 80% global population coverage requirement and require certification and verification of the accuracy and feasibility of the engineering proposals. Second, to deter speculators and frivolous applicants from squandering scarce spectrum, the Commission should set reasonable financial qualification requirements. Third, to ensure that qualified applicants use the spectrum, the Commission should adopt implementation milestones and reclaim the spectrum of GSTS licensees who fail to satisfy these requirements. Fourth, the Commission should grant GSTS licenses to all qualified applicants for a pro rata share of the spectrum, but allow them to construct systems capable of using the entire GSTS spectrum. If the first three principles are adopted, there should be sufficient spectrum to accommodate all qualified applicants.

Finally, the Commission should adopt GSTS rules promptly so the public can benefit from this groundbreaking new technology. Along with this pleading, SSI has filed its application to construct, deploy and operate a GSTS system. SSI's GSTS application satisfies the proposed regulatory requirements and demonstrates that GSTS can revolutionize global communications. But until the Commission adopts GSTS rules, the application will remain pending and full-scale introduction of the global service must wait. As a consequence, the public interest, convenience and necessity strongly favor expeditious action on this filing and grant of SSI's accompanying application to construct, deploy and operate a GSTS system.

Before the
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Washington, D.C. 20554

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Service in the 47.2-47.5 GHz and)
47.9-48.2 GHz Frequency Bands)
_____)

RM-_____

**REQUEST TO ESTABLISH NEW GSTS SERVICE, ADDITIONAL
COMMENTS AND PETITION FOR RULEMAKING**

Sky Station International, Inc. ("SSI") hereby urges the Commission to
implement rules for the Global Stratospheric Telecommunications Service ("GSTS"), a
new global wireless service in the 47 GHz band made possible by a network of
geostationary stratospheric platforms.^{1/} This revolutionary new technology will enhance

^{1/} SSI is filing concurrently an application to construct, deploy and operate a GSTS
system. As set forth in this pleading, SSI requests the Commission to designate sufficient
spectrum for GSTS use to accommodate all qualified applicants. In addition, particularly
in the event that mutually-exclusive applications are filed, SSI requests a pioneer
preference for its proposed innovative use of the 47 GHz spectrum made possible by its
development of the Corona Ion Engine™ and other technological breakthroughs. See 47
C.F.R. § 1.402. All of the required showings for a pioneer preference request are
contained in this pleading and/or in SSI's GSTS application.

SSI realizes that the pioneer preference policy is controversial and in a state of
flux. It does not wish its pioneer preference request to delay prompt implementation of
its rulemaking request and application.

competition and provide many other benefits to the United States and the global community through its Internet/World Wide Web interconnectivity, portable picturephone service, and broader voice, video and data applications.

Although GSTS is unprecedented, its implementation is consistent with the proposals in the above-referenced Millimeter Wave Proceeding.^{2/} Specifically, the Commission should carve out for GSTS, the 47.2 to 47.5 GHz (for Earth-to-stratosphere communications) and the 47.9 to 48.2 GHz (for stratosphere-to-Earth communications) frequency bands, which already have been proposed for licensed commercial millimeter wave use, leaving a proposed 2400 MHz of spectrum for other licensed millimeter wave services. The Commission also should adopt GSTS service rules either in the Millimeter Wave Proceeding (possibly after opportunity for further comment) or in a separate rulemaking proceeding. The Commission can implement GSTS rules with only minor adjustments to the domestic and international table of allocations. Accordingly, the Commission should proceed as soon as possible to establish GSTS rules and enable SSI and other qualified applicants to provide these new services to the public.

I. THE GSTS TECHNOLOGICAL REVOLUTION

GSTS would operate using a state-of-the-art network of geostationary stratospheric platforms equipped with communications payloads. For example, SSI's GSTS platform will be solar powered and propelled by the revolutionary Corona Ion

^{2/} See Amendment of Parts 2 and 15 of the Commission's Rules to Permit Use of the Radio Frequencies Above 40 GHz for New Radio Applications, Notice of Proposed Rulemaking, 9 FCC Rcd 7078, 7085-86 (1994) (proposing to allow licensed commercial use of the 47.2-48.2 GHz and of the 40.5-42.5 and GHz bands -- a total of 3000 MHz) [hereinafter "Millimeter Wave Notice" and, generally, the "Millimeter Wave Proceeding"].

Engine™. This section describes this unprecedented concept, including 1) the components of the GSTS system, 2) the coverage capabilities, 3) the frequency reuse ability, 4) the transmission standards, and 5) the options for connecting GSTS users to the rest of the world.

A. The GSTS System Components

A typical GSTS network will consist of three primary components: 1) the stratospheric platforms, 2) control facilities, and 3) GSTS communications devices.^{3/}

1. Stratospheric Platforms

Although each GSTS applicant will devise its own platform technology, SSI's network will consist of geostationary stratospheric platforms kept aloft in geostationary positions by lighter-than-air elements (i.e., hydrogen or helium).^{4/} The payload capability of each stratospheric platform can accommodate tons of communications equipment and enough solar arrays and fuel cells to generate a megawatt of power.^{5/} No stratospheric maintenance of the platforms will be required. However, if

^{3/} SSI's specific proposal to construct, deploy and operate a global 250 platform system is described in detail in the Application being filed concurrently with this *Request and Petition*.

^{4/} Stratospheric stations can incorporate versions of proven technology used to lift balloons to 150,000 feet and that has enabled large scale airships to travel vast distances.

^{5/} The telecommunications payload generally will consist of transmitting, receiving and other related equipment. The total weight and buoyancy of a stratospheric platform will be approximately 37 tons.

a stratospheric platform malfunctions or ceases to operate, it can descend to earth in a safe radio-controlled process for refurbishment.^{6/}

SSI's stratospheric platforms are propelled by the revolutionary new Corona Ion Engine™ that uses the surrounding atmosphere and the sun as its fuel sources. With virtually unimpeded access to the sun during the day, stratospheric platforms will produce sufficient solar energy to power both the telecommunications payload and the Corona Ion Engine™. Fuel cells will be utilized to provide power during solar eclipses and at night. The Corona Ion Engine™ contains electrodes that are biased at a negative voltage of at least 3000 volts to eject energetic electrons by means of field emission, forming a plasma of electrons and positive ions. Given the low drag force in the stratosphere, the engine will provide sufficient propulsion to transport the stratospheric platform to its deployment site and maintain it in a geostationary position for at least ten years.

2. Control Facilities

GSTS control facilities -- the second key GSTS system component -- will be located worldwide in order to remain in line-of-sight contact with all stratospheric platforms. The cost of these control facilities is expected to be low compared to the cost of the stratospheric platforms. Control facilities can be co-located with the facilities of other telecommunications providers.

^{6/} Separate multiple redundant communications channels will be used for the command and control of stratospheric platforms. These communications channels will be able to monitor and control all stratospheric platform functions and parameters.

3. GSTS Communicators

GSTS communicators -- the third key system component -- will use millimeter range technology known as Multilithic Microwave Integrated Circuits ("MMICs") developed by the Department of Defense over the past 15 years. The cost of an MMIC chipset for a GSTS communicator will be about \$100 after the first year of GSTS operation. GSTS communicators can be designed to be less than one square centimeter in size.

B. Coverage Capabilities

Stratospheric platforms will be positioned above the major world metropolitan areas and will provide service to outlying regions. SSI will accomplish nearly universal coverage by designing the platforms to cover three zones and by deploying the platforms so that the coverage zones overlap. Coverage will not be provided to Antarctica or over major oceans.

1. High Area Coverage Zones

Portable service will be provided to users in High Area Coverage ("HAC") zones, which extend approximately 30 miles in all directions under each stratospheric platform.^{7/} HAC zones will encompass more than one billion people worldwide and all users within these zones will operate their communicators at all times at greater than a 30 degree angle of elevation from the ground to a GSTS platform (the closer to the center of the circle, the higher the angle of elevation).

^{7/} These user terminals will feature 3 dBi antennas.

2. Wide Area Coverage Zones

SSI's GSTS service will be provided to users in Wide Area Coverage ("WAC") with 23 dBi antennas. WACs encompass 30,000 square mile circular regions and extend 100 miles from the point directly under the platform.

3. Footprint Area Coverage

Each SSI GSTS platform also will offer service to a Footprint Area Coverage ("FAC") zone that extends 350 miles from the point beneath the platform to the horizon visible to a platform. In FAC zones, GSTS service will be provided to communicators that have a 36 dBi antenna with a clear line-of-sight to the platform.

C. Frequency Reuse

The GSTS platforms will employ a very high level of frequency reuse using highly directionalized, cellular-like spot beams. Specifically, each SSI platform can achieve 300 times frequency reuse because it will be close enough to the ground to create a 400,000 square mile coverage area capable of creating 2100 separate geographical cells.^{8/}

Geographic frequency reuse will not result in harmful interference. The cells bordering the coverage areas of two adjacent platforms will be programmed to use different sub-bands of the assigned frequency band. Because of the high directionality of

^{8/} By dividing the allocated frequency band into seven sub-bands, there will be 300 geographically separate cells for each of the seven sub-bands. Hence, the frequency band will have been reused 300 times without interference by each stratospheric platform. Each of the 2100 cells is roughly a hexagonal shape, the circumscribed circle of which would have an average area with a diameter of 5 miles in the HAC zone, 50 miles in the WAC zone and 500 miles in the FAC zone.

47 GHz millimeter waves, adjacent platforms need only avoid overlap of co-channel HAC zones. The pointing accuracy of user terminals in the WAC and FAC zones will avoid interference between co-channel platforms above adjacent major metropolitan areas.

D. Transmission Standards

GSTS systems can use the developing ITU-H.263 audio-video compression standards to maximize the use of their assigned spectrum. These digital coding/decoding algorithms provide for good quality voice and video communications at a 64 kbps data rate. Using advanced one bit per hertz modulation techniques, a 64 kbps data rate can be modulated using a 70 KHz carrier signal. GSTS licensees also can take advantage of additional radiocommunications techniques to enhance the performance of their systems. These techniques may include frequency hopping spread spectrum communications (CDMA), adaptive equalizers, and time division multiplexing.

E. Connecting GSTS Users to the Rest of the World

The GSTS network will interconnect with the Public Switched Telephone Network ("PSTN") in essentially the same way as other wireless systems do. The number of interconnection points will depend on the terrestrial area being served and the destination profile of phone calls. Electronics on board each stratospheric platform will recognize whether a call is destined for another GSTS subscriber or for the PSTN. If destined for the PSTN, the platform's electronic system will automatically route that call to a selected cell that includes a switch close to the destination phone call.

GSTS systems also will be able to route calls via lasers that link the stratospheric platforms to each other. Digital switching equipment onboard each

stratospheric platform will recognize phone numbers of other GSTS communicators and will transfer their calls directly to other GSTS communicators without relying on third party interconnection arrangements.

II. THE PROPOSED GSTS ALLOCATION WILL PROMOTE THE GOALS OF THE *MILLIMETER WAVE PROCEEDING* AND PROVIDE MULTIPLE OTHER PUBLIC INTEREST BENEFITS.

Opening up a portion of the 47 GHz band for the revolutionary GSTS service will promote the policy goals of the Millimeter Wave Proceeding and other public interest objectives while protecting the ozone layer and the environment. GSTS will offer the global community -- rich and poor, developed and under-developed -- an inexpensive all-digital 64 kbps wireless service capable of transmitting voice, video and data communications, and providing Internet/World Wide Web connectivity and portable picturephone service. This will provide the Commission with the vehicle to implement its mandate to establish nationwide and world-wide wireless telecommunications at a price affordable to the mass world public.

As explained more fully in the following chart and in Attachment 1, consumers will demand this service because it will be cheaper than competing satellite services and will have broader offerings than terrestrial wireless services. GSTS thus will provide true inter-modal competition and fill a consumer demand that is not satisfied by other services.

Markets and Competition Matrix

		Mobility					
		High	Medium	Low			
Cost to user	High	LEO MSS		Ka-Band	all Geography	Global Coverage all People all Cities	
	Medium		GSTS (eg Sky Station)				
	Low	Cellular & PCS		Fiber Optic			
		Bandwidth to user					
		Low	Medium	High			

SSI also believes that GSTS will position the United States as a world-wide leader in stratospheric telecommunications technology, and as described in Attachment 2, will promote substantial job opportunity and economic growth by creating a new multi-billion dollar market for stratospheric platforms, millimeter wave chipsets, 47 GHz transmission equipment, and global broadband wireless services.^{9/}

^{9/} See Amendment of Parts 2, 15 and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, First Report and Order and Second Notice of Proposed Rulemaking, ET Docket No. 94-124 (rel. Dec. 15, 1995) [hereinafter the "First Millimeter Wave Order"]. In the First Millimeter Wave Order, the Commission noted that other parts of the world, including Europe and Japan, are considering commercial use of millimeter wave technology. Id., at ¶ 2, n.4. SSI understands that Japan also is developing stratospheric telecommunications platform technologies.

(continued...)

By providing essential services at affordable prices, GSTS, more than any other existing or proposed global service, will help preserve life and property by facilitating 1) tele-medical diagnosis, 2) emergency rescue and safety alerts, 3) distribution of life-saving agricultural and health care information, 4) disaster-proof communications, 5) crime monitoring, and 6) environmental monitoring and analysis. Additionally, GSTS will deliver its advanced services to over 80% of the world's population, thus bridging the disturbing and growing gap between information "haves" and "have nots". Indeed, GSTS is the first wireless telecommunications system to offer as much exchange line capacity as is available over wireline systems. GSTS also will increase global access to education by facilitating virtual universities, virtual hospitals, and other virtual education programs. Finally, SSI's GSTS network will not deplete the earth's fragile ozone layer or produce space debris, and its reusable platforms can return to the earth's surface for refurbishment.

III. THE PROPOSED GSTS REGULATORY FRAMEWORK IS CONSISTENT WITH COMMISSION POLICY AND PROMOTES THE PUBLIC INTEREST.

SSI has carefully crafted a GSTS regulatory framework that will encourage commercial development of the unused "millimeter wave" band by multiple competitors. As explained below, this regulatory proposal is consistent with the Commission's 47 GHz

^{2/}(...continued)

Indeed, the Japanese have long recognized the value of being able to position a platform above their population centers. MITI has been experimenting for some time with various technologies, including a flying wing and airships held aloft by microwave energy.

band proposal in the Millimeter Wave Proceeding^{10/} and will require only minor tweaking of the U.S. and international frequency allocations which can be addressed at the upcoming WRC-97.

Additionally, SSI's regulatory proposal contemplates that all qualified GSTS applicants would be accommodated, thereby promoting competition and avoiding the problem of resolving mutually-exclusive proposals for international service. This proposal is based on four key principles: 1) establishing flexible technical standards for GSTS (which looks toward coverage of 80% of the world population), while requiring applicants to document and verify their engineering proposals; 2) setting reasonable financial qualifications; 3) prescribing implementation milestones; and 4) granting licenses to all qualified applicants for a pro rata share of the spectrum but allowing them to construct systems with the capacity to use the entire band.

A. The Commission Should Dedicate a Portion of the 47 GHz Band for GSTS.

SSI's regulatory proposal would dedicate millimeter wave frequencies in the 47 GHz band -- 47.2-47.5 GHz (Earth-to-Stratosphere) and 47.9-48.2 (Stratosphere-to-Earth) -- for GSTS, a new paradigm of fixed, mobile and portable wireless telecommunications service.^{11/} This would promote the objectives of the Millimeter Wave Proceeding by introducing licensed commercial service in the 47.2-48.2 GHz band. The proposal also would require no frequency reallocation since the entire 47.2-50.2 GHz

^{10/} See Millimeter Wave Notice, 9 FCC Rcd at 7083, 7085-86 (proposing to allow licensed commercial use of the 47.2-48.2 GHz band).

^{11/} Id. at 7078.

band can be used for Fixed and Mobile Services on a national and international basis, although minor clarifications to the U.S. and international frequency allocations would be needed to minimize the potential for harmful interference.

1. GSTS Is Ideal for the 47 GHz Band.

Although allocated for governmental and non-governmental use, the 47 GHz band and other millimeter wave frequencies remain relatively undeveloped.^{12/} As uses for this spectrum emerged in military and scientific sectors, the Commission initiated the Millimeter Wave Proceeding to permit the transfer of some of this technology to the commercial arena. The Commission also intended the Millimeter Wave Proceeding to stimulate job and economic growth and promote national competitiveness by making technology available for use in other regions of the world.^{13/} The Commission proposed in the Millimeter Wave Proceeding to license millimeter wave service ("LMWS") in the 47.2-48.2 GHz band -- a portion of which is requested here for GSTS.^{14/}

^{12/} See 47 C.F.R. § 2.106; Millimeter Wave Notice, 9 FCC Rcd at 7079 (radio spectrum above 40 GHz is generally unused).

^{13/} See First Millimeter Wave Order, at ¶ 2 and n.4. The Commission initially had proposed to use the 47.2-47.4 GHz band for vehicular radar, but declined to do so in the First Millimeter Wave Order. *Id.*, at ¶¶ 10-11.

^{14/} Millimeter Wave Notice, 9 FCC Rcd at 7082, 7085-86. The FCC did adopt rules for unlicensed millimeter wave services in other frequency bands above 40 GHz and requested comment on specific proposals relating to a third set of frequencies above 40 GHz. (SSI does not wish to delay Commission action affecting other frequencies within the millimeter wave band.) Some commenters in the Millimeter Wave Proceeding opined favorably with regard to the prospects for use even by satellite communications systems of frequencies in the 50 GHz range, excluding the atmospheric absorption peak at 60 GHz.

Consistent with this pending proposal, the Commission should dedicate the 47.2-47.5 and 47.9-48.2 GHz band to GSTS. As explained more fully in Section II, GSTS would satisfy the policy goals of the Millimeter Wave Proceeding by promoting universal service and stimulating telecommunications competition, economic growth and U.S. technological advances.

GSTS has been carefully designed to have a minimal impact on the spectrum environment. Unlike many other proposed services, GSTS is uniquely suited for the 47 GHz band, notwithstanding the high water vapor attenuation and modest dry air losses associated with this spectrum.^{15/} The high elevation angles and high power (up to one megawatt) enable the stratospheric platforms to provide useful and reliable communications links using these frequencies.^{16/} Moreover, the unencumbered nature of this spectrum will provide GSTS with sufficient bandwidth to offer inexpensive wireless broadband telecommunications service -- as low as 10 cents per minute -- throughout the world. As explained more fully below, only a 300 MHz + 300 MHz frequency dedication will support multiple GSTS services.^{17/}

^{15/} Charts detailing the Atmospheric Rain Attenuation and the Atmospheric Gas Attenuation are provided at Attachment 4.

^{16/} The overall losses of about 1.1dB per kilometer in rain cells are minimized by virtue of the very high elevation angles possible with geostationary stratospheric platforms. Where communications density is highest, the elevation angles will be high, thus minimizing atmospheric losses. Also SSI intends to operate at 98% availability, thus further reducing link bank propagation margin requirements.

^{17/} The minimum bandwidth needed for a broadband mobile and portable telecommunications service is about 70-100 KHz, depending on precise modulation technique. In this range, a 64 kbps signal can be reliably conveyed assuming adequate power and other link budget factors. In order to achieve the billion person goal of the
(continued...)

Finally, the success of GSTS depends upon opening up the 47.2-47.5 and 47.9-48.2 GHz band for GSTS services. All other frequency bands examined are 1) technically incompatible with GSTS operations, 2) not allocated for fixed and mobile services, or 3) subject to restrictions on the use of non-terrestrial transmitters. In addition, most other frequency bands are heavily encumbered and therefore would require incumbent relocation to make room for the global GSTS. This relocation process could take many years, thus delaying the initiative of GSTS service to users worldwide.^{18/}

2. The GSTS Proposal Generally Is Consistent With Existing International and U.S. Frequency Allocations.

Authorizing GSTS in a portion of the 47 GHz band is generally consistent with existing international and U.S. frequency allocations, but will require some minor clarifications. The proposed GSTS spectrum -- 47.2-47.5 GHz (Earth-to-Stratosphere) and 47.9-48.2 GHz (Stratosphere-to-Earth) -- is part of a broader international and U.S. frequency allocation -- 47.2-50.2 GHz -- for Fixed, Mobile and Fixed-Satellite Service. Since GSTS is a fixed and mobile service, its proposed operation will not require frequency reallocation.

^{17/}(...continued)

GSTS, and assuming aggressive frequency reuse, a minimum allocation of 300+300 MHz is needed.

^{18/} Although some other millimeter wave bands could suffice, SSI selected this sub-band to avoid interference with proposals of other commenters in the Millimeter Wave Proceeding. In particular, there is an effort to establish a common worldwide band for high volume point-to-point microwave communications starting at 48.5 GHz. SSI has been careful to avoid those bands identified by the ERC and by the TIA for such systems.

However, both the domestic and international frequency allocation tables contain footnotes allowing the Broadcasting-Satellite Service feeder links to operate in the 47.2-50.2 GHz band. If interpreted literally, this would require GSTS to share its proposed sub-bands -- 47.2-47.5 and 47.9-48.2 GHz -- with broadcasting-satellite service feeder links. This sharing could interfere with GSTS because stratospheric platforms may be placed in the transmission paths of these feeder links. As a consequence, the Commission should propose minor revisions to footnote 901 at the upcoming WRC-97 Conference, limiting the use of Broadcast Satellite Service feeder links in the 47.2-47.5 and 47.9-48.2 GHz band. The table of allocations also should be clarified to permit only fixed and mobile GSTS stations to operate in the 47.2-47.5 and 47.9-48.2 GHz bands. Fixed satellite services and broadcast satellite service feeder links, for which no demand has been demonstrated, could operate in the remaining portion of the broader 47.2-50.2 GHz frequency allocation. Comparable changes also should be made to the domestic table of allocations.^{19/}

B. The Proposed GSTS Service Rules Will Provide Opportunities for All Qualified GSTS Applicants.

The proposed GSTS service rules are designed to enable all qualified GSTS applicants to construct and operate their own environmentally and spectrally efficient service. The success of this proposal, however, rests on four key policy principles. First, to attract new entrants into the GSTS service, the Commission should adopt liberal technical rules, but require certification and verification of the accuracy and

^{19/} Attachment 3 contains the proposed revisions of the domestic and international table of allocations.

feasibility of the engineering proposals. The description of the service should make clear, among other things, that it is intended for availability to 80% of the world's population. Second, to deter speculators and frivolous applicants from squandering scarce spectrum and delaying bona fide service providers, the Commission should set reasonable financial qualification requirements. Third, to ensure that qualified applicants use the spectrum as intended, the Commission should adopt implementation milestones and reclaim the spectrum of GSTS licensees that fail to satisfy these requirements. Fourth, the Commission should grant GSTS licenses to all qualified applicants for a pro rata share of the spectrum, but allow them to construct their systems with the capability of using the entire GSTS spectrum. If the other three principles are adopted, there should be sufficient spectrum to accommodate all the qualified applicants without having to engage in mechanisms to resolve mutually- exclusive applications.

1. Technical Qualifications

Although the Commission should adopt flexible technical rules, it also should require all GSTS applicants to a) provide reasonable documentation of the feasibility of all components of their networks, and b) submit engineering certifications verifying the accuracy of the technical information contained in the application.

The following describes some of the proposed GSTS technical rules, including the 80% coverage requirement, the maximum system capacity allowance, and international coordination rules.

a. Frequency Reuse

As explained in Section I, GSTS licensees will be able to employ a very high level of frequency reuse without causing harmful interference. Accordingly, SSI proposes that GSTS applicants divide their frequency assignment into sub-bands and associate each sub-band with an adjacent cellular-like geographical area, thereby preventing interference and allowing for the most efficient means of geographic frequency reuse.

b. Bandwidths, Waveform, Channelization

The Commission should not specify bandwidth, waveform or channelization standards for GSTS in order to avoid "picking winners and losers." Marketplace forces will determine the best technology for this service.

c. Field Intensity

The Commission should not specify additional field intensity limits beyond those required by ANSI for non-ionizing radiation. However, the Commission should require each licensee to comply with the same out-of-band emission limitations that apply in satellite services.

d. 80% Coverage Requirement/Number of Platforms

The Commission should not require a minimum number of stratospheric platforms, but instead should require applicants to design systems that will serve at least 80% of the world's population by a certain target date.